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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/736,894	12/17/2003	Alfred Permuy	LOM-34	4036

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EXAMINER	
LE, JOHN H	
ART UNIT	PAPER NUMBER
2863	

DATE MAILED: 05/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/736,894	PERMUY ET AL.	
	Examiner	Art Unit	
	John H. Le	2863	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-5 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) _____ is/are rejected.

7)☒ Claim(s) 1-5 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 17 December 2003 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because the abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. Correction is required. See 37CFR 1.72.

2. The abstract of the disclosure is objected to because of the form and legal phraseology often used in patent claims, such "means" (line 3) and as “consists” (line 6) should be avoided.

3. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

4. Claims 1-5 are objected to because of the following informalities:

Claim 1, line 15, ω, $<T_k(\omega), T_l^*(\omega)>$, and line 17, $J\omega$ require the definitions

Claim 2, line 10, $B(\omega)$ requires a definition.

Claim 3, line 10, $B(\omega)$, $d\omega$ require the definitions.

Claim 4, line 5, $<T_k, T_l^*>$, $d\omega$ require the definitions.

Claim 4, line 6, “the cross-correlation functions γ_{ij} “ lacks antecedence basis.

Claim 5, line 4, ${}^{t}T$, T, $s(\omega)$ require the definitions.

Appropriate correction is required.

Allowable Subject Matter

5. Claims 1-5 are objected to as containing informalities, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 1, none of the prior art of record teaches or suggests the combination of a method of detecting and locating noise sources each emitting a respective signal S_j with J = 1 to M, detection being provided by means of acoustic wave or vibration sensors each delivering a respective time-varying electrical signal si with i lying in the range 1 to N, wherein the method consisting: in taking the time-varying electrical signals delivered by the sensors, each signal S_i (t) delivered by a sensor being the sum of the signals S_j emitted by the noise sources; in amplifying and filtering the time-varying electrical signals as taken; in digitizing the electrical signals; in calculating the functional f, such that:

$$f(n_1, \ldots, n_j, \ldots, n_M) = \frac{\det(\langle T_k(\omega), T_l^*(\omega)\rangle \quad k,\ l = 0 \text{ to } M)}{\det(\langle T_k(\omega), T_l^*(\omega)\rangle \quad k,\ l = 1 \text{ to } M)}$$

with

$$(T_k(\omega))_i = e^{j\omega\frac{\langle n_k, c_i\rangle}{c}}$$

$\langle .,. \rangle$ being the scalar product;

.. c_i being the vector constructed between the center of gravity of the sensors and the position of sensor i;

.. n_j being the unit vector in the direction defined by the center of gravity of the senors and source j;

.. with $T_0 = s$; and

.. with c = the speed of sound; and

in minimizing the functional f relative to the vectors n_j for j = 1 to M in such a manner as to determine the directions n_j of the noise sources. It is these limitations as they are claimed in the combination with other limitations of claim, which have not been found, taught or suggested in the prior art of record, that make these claims allowable over the prior art.

Russo (USP 5,531,099) disclose a method of detecting and locating noise sources, which include turbulent flow within the conduit, detecting a first transmitted vibration propagating along the conduit in response to the imposed vibration at a pair of sensors. '039 fails to specify the steps of in taking the time-varying electrical signals delivered by the sensors; each signal S_i (t) delivered by a sensor being the sum of the signals S_j emitted by the noise sources; in amplifying and filtering the time-varying electrical signals as taken; in digitizing the electrical signals; in calculating the functional f, such that:

$$f(n_1, \ldots, n_j, \ldots, n_M) = \frac{\det(\langle T_k(\omega), T_l^*(\omega)\rangle \quad k, l = 0 \text{ to } M)}{\det(\langle T_k(\omega), T_l^*(\omega)\rangle \quad k, l = 1 \text{ to } M)}$$

with

$$(T_k(\omega))_i = e^{j\omega\frac{\langle n_k, c_i\rangle}{c}}$$

$\langle .,. \rangle$ being the scalar product;

.. c_i being the vector constructed between the center of gravity of the sensors and the position of sensor i;

.. n_j being the unit vector in the direction defined by the center of gravity of the senors and source j;

.. with $T_0 = s$; and

.. with c = the speed of sound; and

in minimizing the functional f relative to the vectors n_j for j = 1 to M in such a manner as to determine the directions n_j of the noise sources, as now recited in claim 1 of the present invention.

Fookes (USP 6,751,559) disclose a method is disclosed for attenuating noise from marine seismic signals caused by a noise in the water. The method includes determining an arrival time of a noise event at each of a plurality of seismic sensors, estimating a position of the noise source from the arrival times, and attenuating the noise event from the signals detected by the seismic sensors. '559 fails to specify the steps of calculating the functional f, such that:

$$f(n_1, \ldots, n_j, \ldots, n_M) = \frac{\det(<T_k(\omega), T_l^*(\omega)> \quad k, l = 0 \text{ to } M)}{\det(<T_k(\omega), T_l^*(\omega)> \quad k, l = 1 \text{ to } M)}$$

with

$$(T_k(\omega))_i = e^{j\omega\frac{<n_k, c_i>}{c}}$$

<.,.> being the scalar product;

.. c_i being the vector constructed between the center of gravity of the sensors and the position of sensor i;

.. n_j being the unit vector in the direction defined by the center of gravity of the senors and source j;

.. with $T_0 = s$; and

.. with c = the speed of sound; and

in minimizing the functional f relative to the vectors n_j for j = 1 to M in such a manner as to determine the directions n_j of the noise sources, as now recited in claim 1 of the present invention.

Feng et al. (US 2001/0031053) disclose a unique signal processing technique for localizing and characterizing each of a number of differently located acoustic sources. This form may include two spaced apart sensors to detect acoustic output from the sources. Each, or one particular selected source may be extracted, while suppressing the output of the other sources. '053 fails to specify the steps of calculating the functional f, such that:

$$f(n_1, \ldots, n_j, \ldots, n_M) = \frac{\det(<T_k(\omega), T_l^*(\omega)> \quad k, l = 0 \text{ to } M)}{\det(<T_k(\omega), T_l^*(\omega)> \quad k, l = 1 \text{ to } M)}$$

with

$$(T_k(\omega))_i = e^{j\omega\frac{<n_k, c_i>}{c}}$$

<.,.> being the scalar product;

.. c_i being the vector constructed between the center of gravity of the sensors and the position of sensor i;

.. n_j being the unit vector in the direction defined by the center of gravity of the senors and source j;

.. with $T_0 = s$; and

.. with c = the speed of sound; and

in minimizing the functional f relative to the vectors n_j for j = 1 to M in such a manner as to determine the directions n_j of the noise sources, as now recited in claim 1 of the present invention.

Contact Information

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John H Le whose telephone number is 571-272-2275. The examiner can normally be reached on 8:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E Barlow can be reached on 571-272-2269. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

John H. Le

Patent Examiner-Group 2863

April 23, 2005

MICHAEL NGHIEM
PRIMARY EXAMINER